IMPLEMENT FOR PREPARING SEEDBEDS

This invention relates to an implement towed by a towing vehicle for preparing lawns and seedbeds. Reference is made to my prior U.S. Pat. Nos. 5,413,181 and 5,515,625.

Preparation of lawns and seedbeds, particular around new construction, requires a great deal of soil preparation, which heretofore has been accomplished manually, often at substantial expense. Vegetation, small rocks, twigs, etc. must be removed from the seed bed, the soil must be scarified, and the seed bed or lawn must be graded and worked into the final grade prior to planting or seeding. Furthermore, it is often necessary to move soil from one area to another, to fill in low places. These low places are common around sidewalks, driveways, and other concrete work, and care must be taken to assure that any power equipment is not driven on or across the sidewalks, particularly if the concrete is not yet fully cured.

The present invention provides an implement for grading, working and scarifying the soil. The implement is towed behind a small tractor or other vehicle and is connected to the tractor by a common three point hitch, so that the implement may be raised and lowered and the angle of the implement may be adjusted relative to the ground. The implement includes a main frame upon which scarifying teeth extend at a soil penetrating angle and are distributed across the width of the implement. A main frame also supports tined members which extend parallel to the direction of travel to work and provide a final grade to the soil. The scarifying teeth are rigidly attached to the frame and thus scarify soil when the tractor is moved in either the forward or backward directions. When the implement is moved backward, the member on which the scarifying teeth and tines are mounted scoop up soil which can be transferred and accurately placed in low places, particularly around walks and driveways. Finally, a blade is mounted on a subframe which is pivotally mounted on the main frame. The blade follows the contour of the ground and when the tractor is driven over the ground, removes vegetation, small rocks, etc. before the ground is scarified. The subframe on which the blade is mounted can be locked in a raised position when the blade is not used or the blade can be locked in a lowered position in which the scarifying teeth and tines are raised off of the ground so that the implement may also be used for rough grading.

These and other advantages of the invention become apparent from the following description, with reference to the accompanying drawings, in which:

FIG. 1 is a view in perspective of an implement made according to the teachings of the present invention, the portion of the tractor used for pulling the implement being showing in phantom;

FIG. 2 is an exploded perspective view illustrating the components of the implement of the present invention;

FIG. 3 is a top plan view of the implement according to the present invention;

FIG. 4 is cross-sectional view taken substantially along lines 4—4 of FIG. 3, the tractor used to pull the implement being illustrated in phantom;

FIG. 5 is a view similar to FIG. 4, illustrating the implement with the scarifying teeth and grading tines raised in an upper position so that the blade is used to provide a rough grade of the soil;

FIG. 6 is view similar to FIGS. 4 and 5, but illustrating the blade of the implement in the raised position in which the blade is not used; and

FIG. 7 is a view similar to FIGS. 4–6, but illustrating the manner in which soil can be transferred when the implement is moved in the reverse direction to fill in low places in the lawn or seed bed.

Referring now to the drawings, an implement generally indicated by the numeral 10 includes a main frame generally indicated by the numeral 12 which includes a pair of substantially parallel main frame members 14 and 16 which extend transversely across the path along which the implement 10 is pulled by a tractor indicated in phantom at 18. A pair of side frame members 20, 22 interconnect the main frame members 14 and 16. The main frame member 14 is provided with a conventional three point hitch assembly generally indicated by numeral 24, consisting of hitch points 26, 28 and 30, which are adapted to be connected to corresponding hitch points on tractor 18 in a manner well known to those skilled in the art. A reinforcing member 25 connects the hitch assembly to main frame member 16. Tractor 18 is provided with hydraulic cylinders that raise and lower the implement 10 and are also able to adjust the angle of the implement 10 relative to ground.

The main frame member 16 includes a pair of lips 32, 34 which are connected together such that the lip 34 extends from the lip 32 at substantially right angles. A tined member generally indicated by the numeral 36 is mounted to the lip 32 and includes tines 38 which project from the lip 32 in a direction substantially parallel to the direction of travel of the implement 10. The tines 38 are relatively closely spaced, and when engaged with the soil, work and level the soil to provide a final grade as will hereinafter be explained. The tines 38, and the lips 32 and 34, cooperate to define a scoop for capturing soil to permit soil to be transferred as will also be hereinafter explained.

Transversely spaced sockets generally indicated by the numeral 40 are secured, for example, by welding, to the side of the lip 34 opposite the side from which the lip 32 extends. Each of the sockets 40 slidably receive a scarifying tooth 42. Each of the scarifying teeth 42 are made of a strong, solid material such as steel and has a cross-section comparable to the cross-section of the sockets 40 so that the scarifying teeth 42 are slidably received within the sockets 40. Each of the sockets 40 and teeth 42 as provided with cooperating, transversely extending apertures 44. A clinch pin 46 is installed in one of the apertures 44 and extends through the corresponding scarifying tooth 42 to hold the tooth 42 in the socket 40. Because a series of aligned openings 44 are provided, the distance that the scarifying teeth extends from the corresponding socket, and, therefore, the distance that the scarifying teeth penetrate into the ground, is adjustable. Since the scarifying teeth 42 wear, the scarifying teeth 42 also may be extended from their corresponding sockets 40 to compensate for wear while maintaining penetration of the tooth into the ground at a predetermined distance. Since the sockets 40 are welded to the lip 34, the teeth 42 are rigidly attached to the main frame member 16 so that the scarifying teeth 42 may be used to scarify soil during movement of the implement 10 either forward or backward. For proper scarifying, the teeth must not be too close together, or the teeth will merely pull soil instead of scarifying the soil, and must not be spaced too far apart, or scarifying will be inadequate. It has been found that placing the sockets 40 about every eight inches (on center) is about the optimum spacing.

Brackets 48 secured along the length of the main frame member 14 and are provided with an aperture 50 for receiving a pivot pin 52 for pivotally connecting subframe members 54 to the main frame member 14. The subframe members 54 are components of a subframe generally indicated by the numeral 56 and are secured to transverse